

FIG. 1

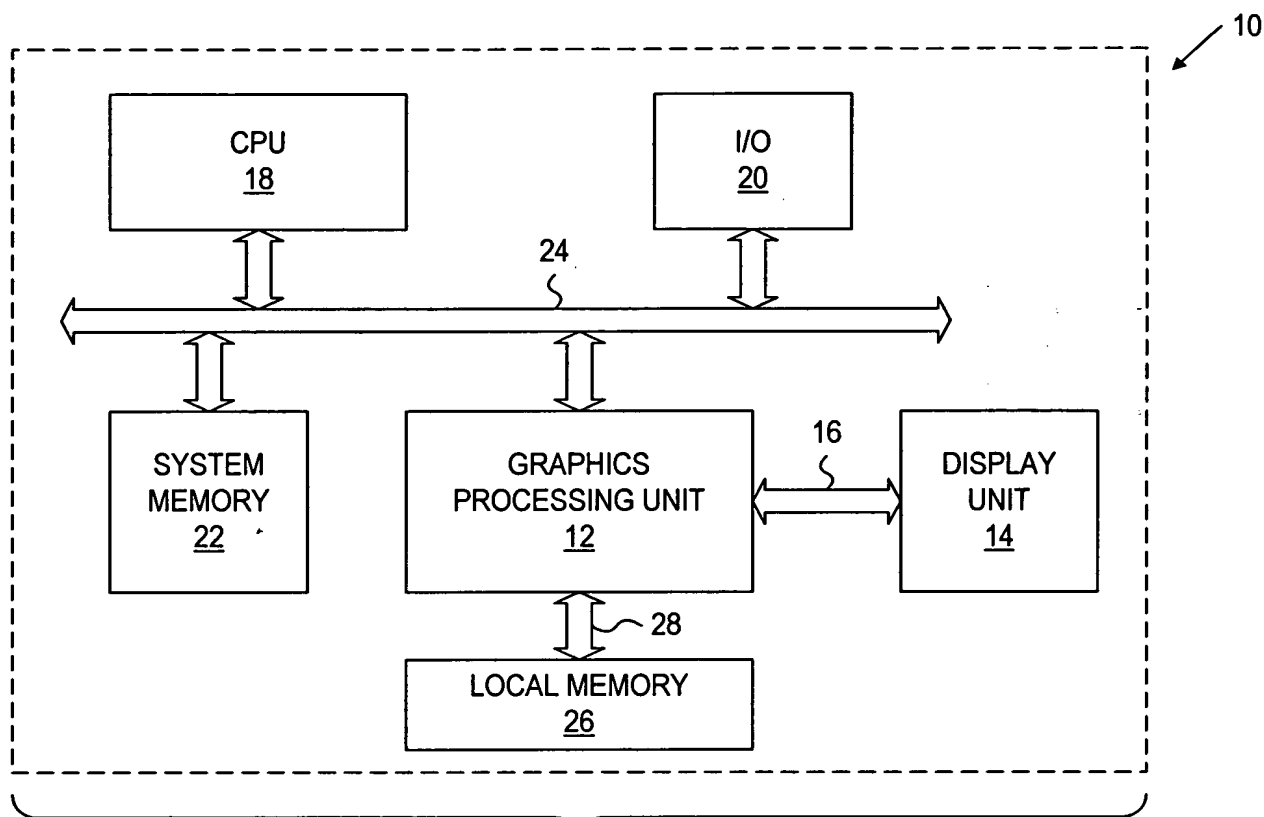


FIG. 2A

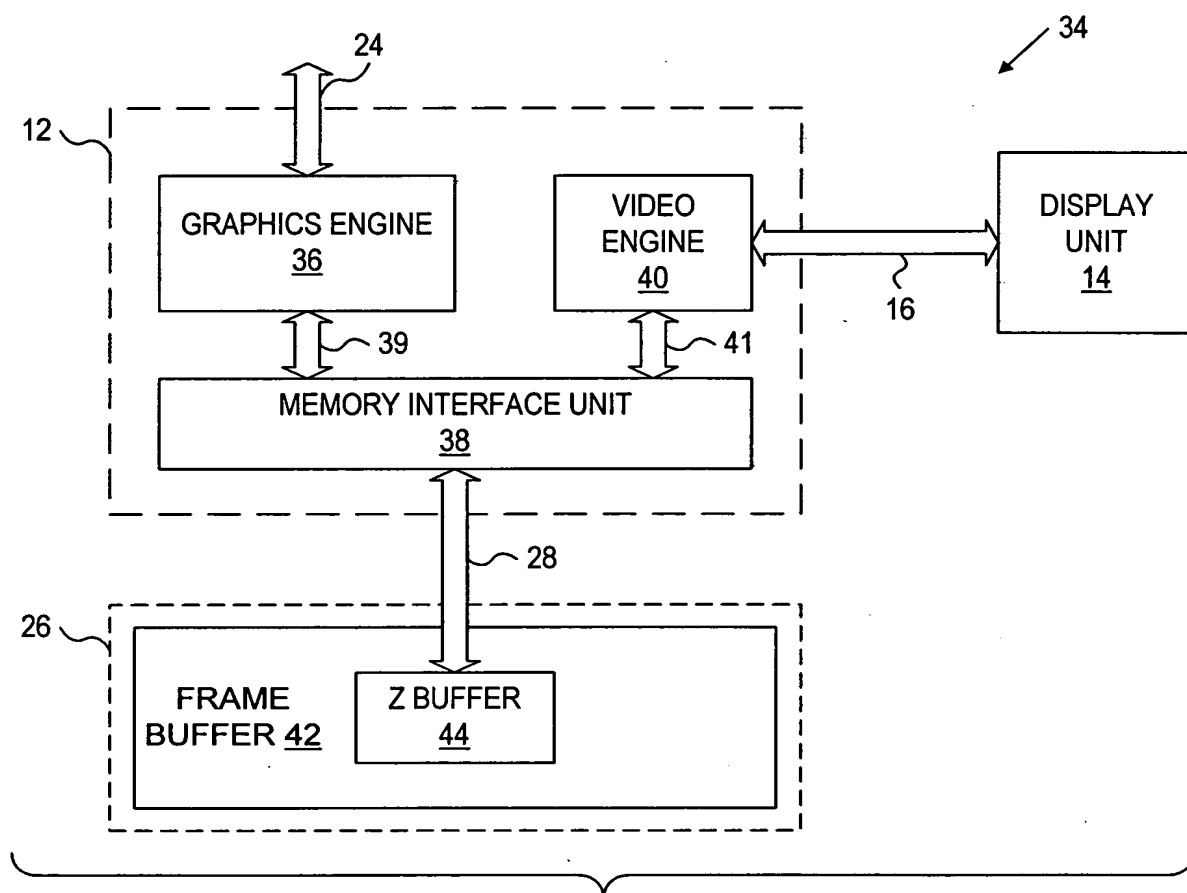


FIG. 2B

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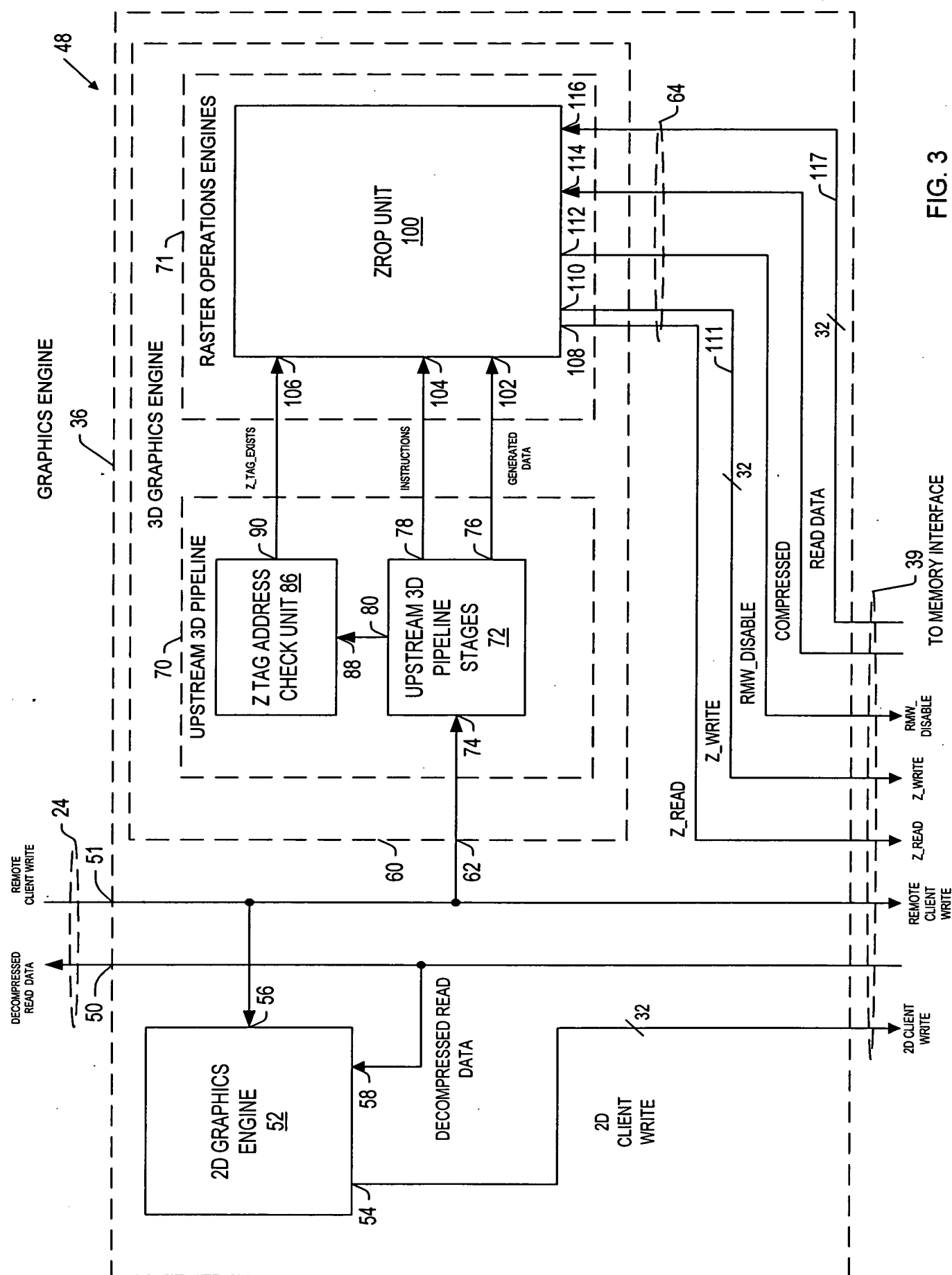


FIG. 3

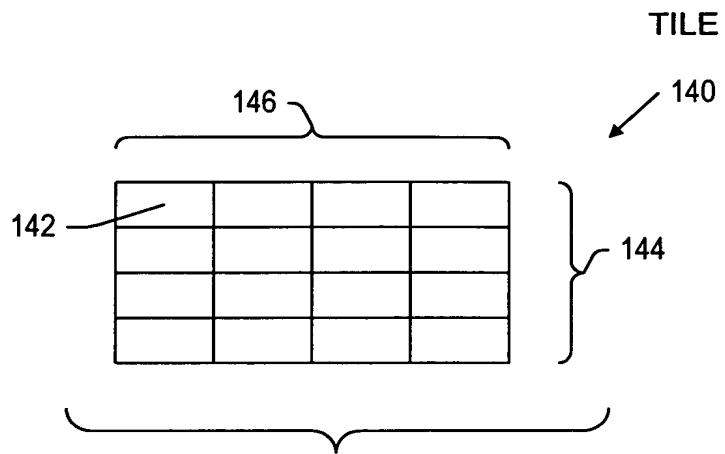


FIG. 4A

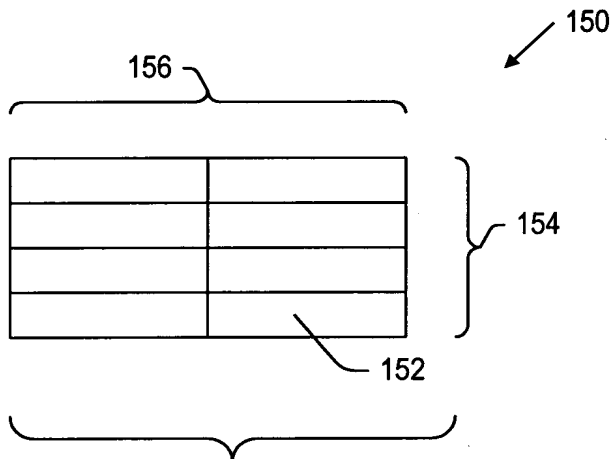


FIG. 4B

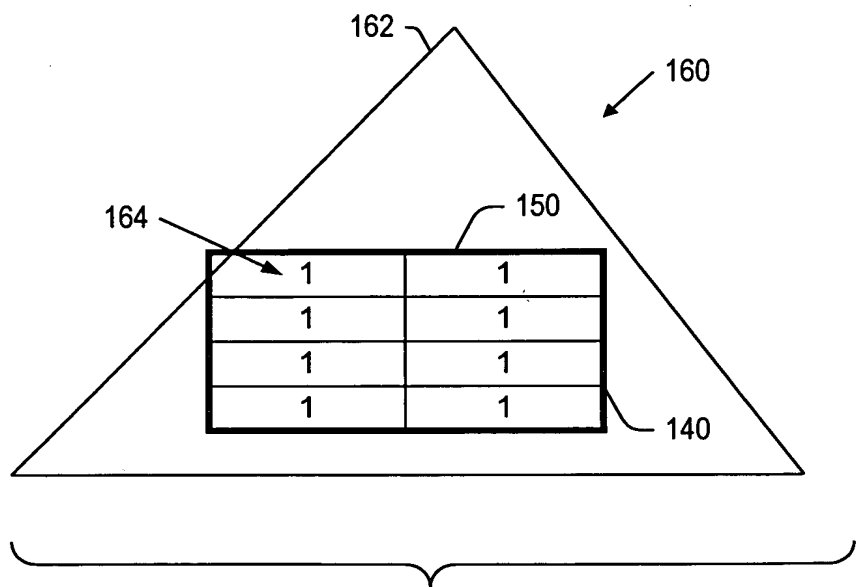


FIG. 4C



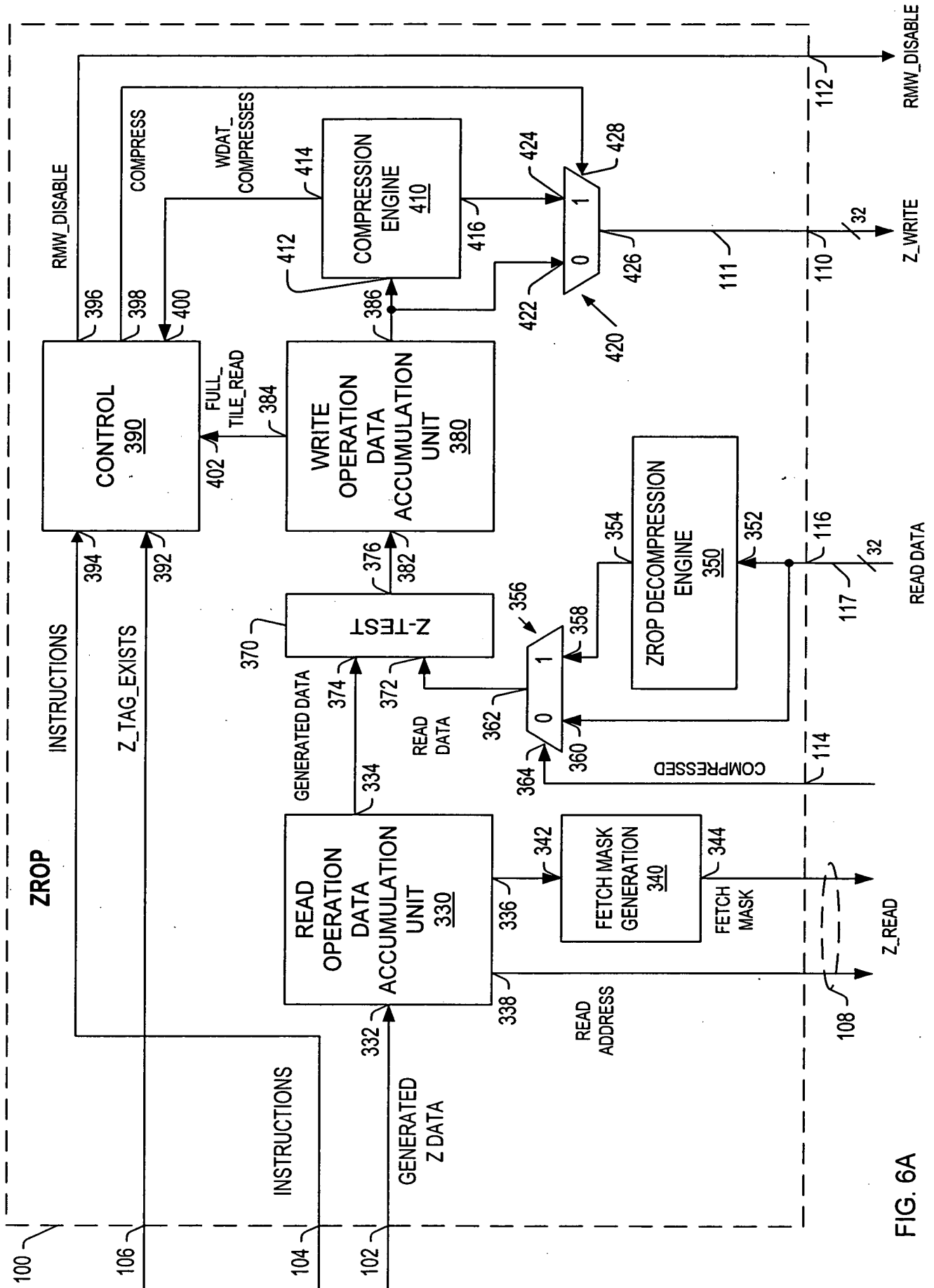


FIG. 6A

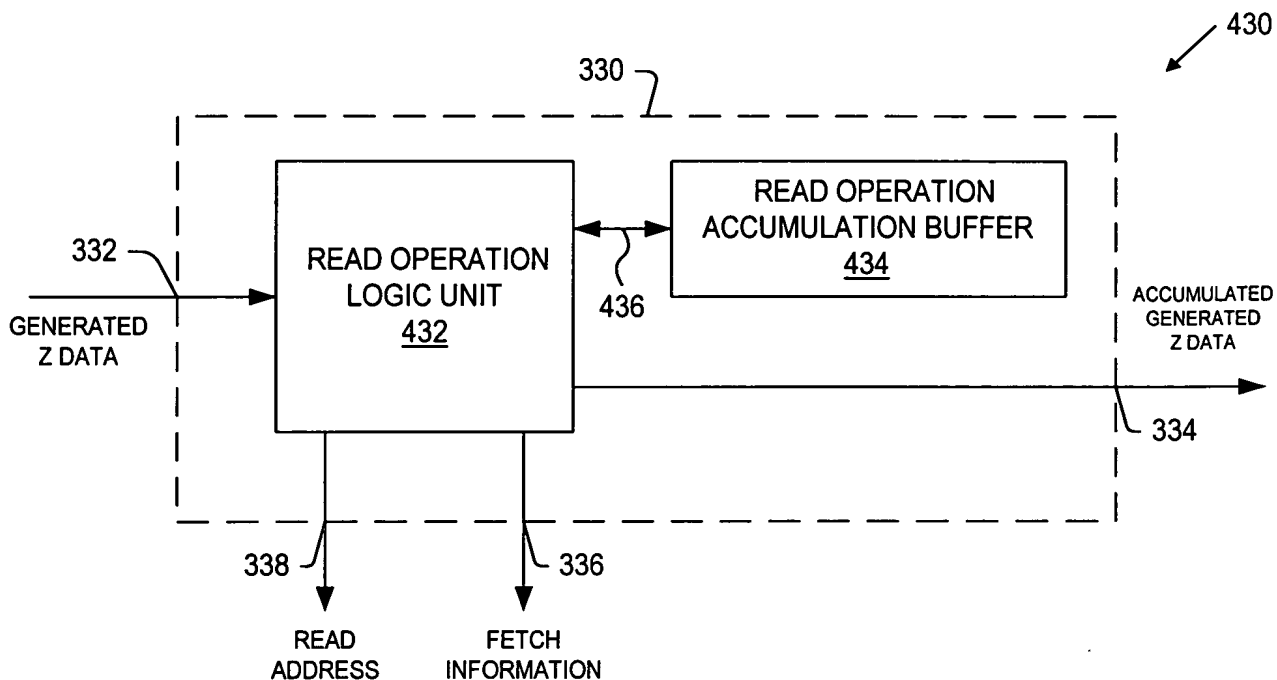


FIG. 6B

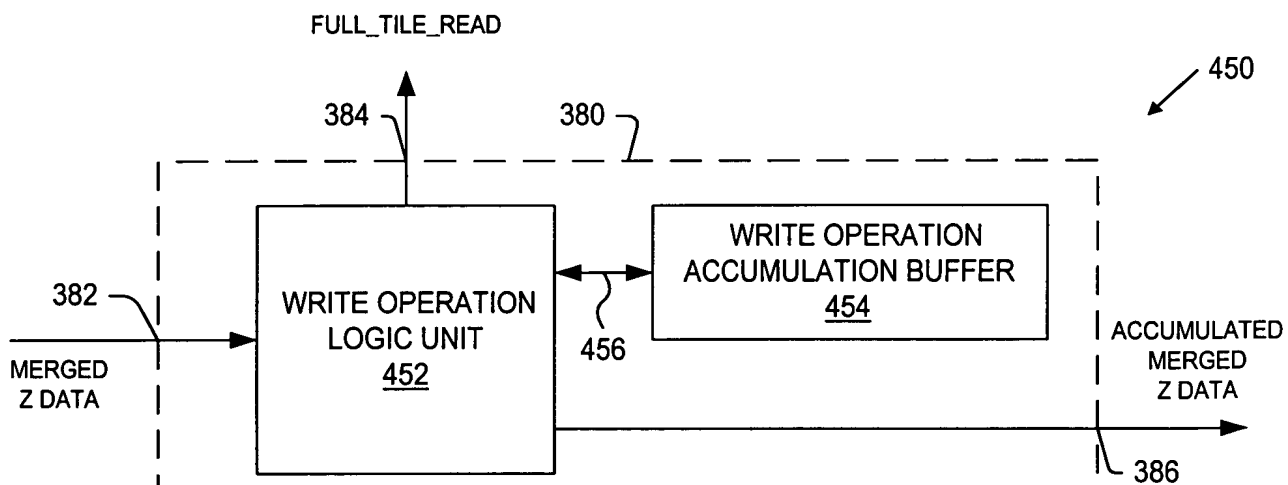


FIG. 6C

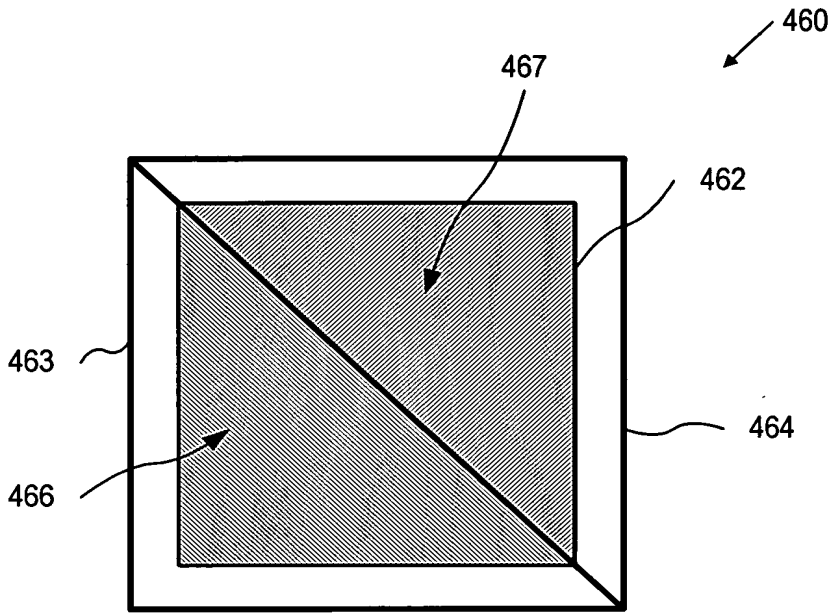


FIG. 6D

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WRITE WITH Z READ

Z_TAG_EXISTS	RDAT_COMPRESSED	WDAT_COMPRESSES	FULL_TILE_READ	ACTION		
				COMPRESS	FULL_WRITE	RMW_DISABLE
0	0	X	X	0	0	1
1	0	X	X	0	0	1
1	1	X	X	0	1	1
1	0	0	X	0	0	1
1	0	1	1	1	0	1
1	1	0	X	0	1	1
1	1	1	1	1	0	1

FIG. 7A

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WRITE WITHOUT Z READ

Z_TAG_EXISTS	Z_COMP_OK	RDAT_COMPRESSED	WDAT_COMPRESSES	FULL_COVG	ACTION		
					COMPRESS	FULL_WRITE	RMW_DISABLE
0	0	-	X	X	0	0	1
1	0	-	X	0	0	0	0
1	0	-	X	1	0	0	1
1	1	-	0	0	0	0	0
1	1	-	0	1	0	0	1
1	1	-	1	1	1	0	1

FIG. 7B

## FAST CLEAR

Z_TAG_EXISTS	Z_COMP_OK	RDAT_COMPRESSED	WDAT_COMPRESSES	FULL_COVG	ACTION		
					COMPRESS	FULL_WRITE	RMW_DISABLE
0	0	-	1	X	0	0	1
1	0	-	1	0	0	0	1
1	0	-	1	1	0	0	1
1	1	-	1	0	1	0	1
1	1	-	1	1	1	0	1

FIG. 7C

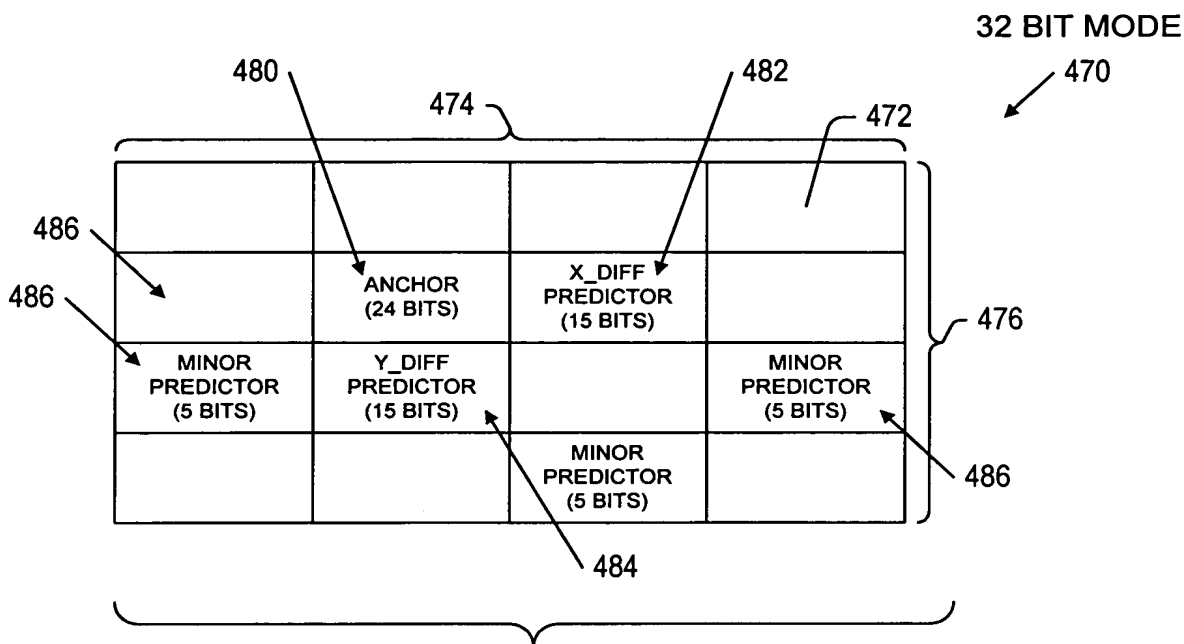


FIG. 8A

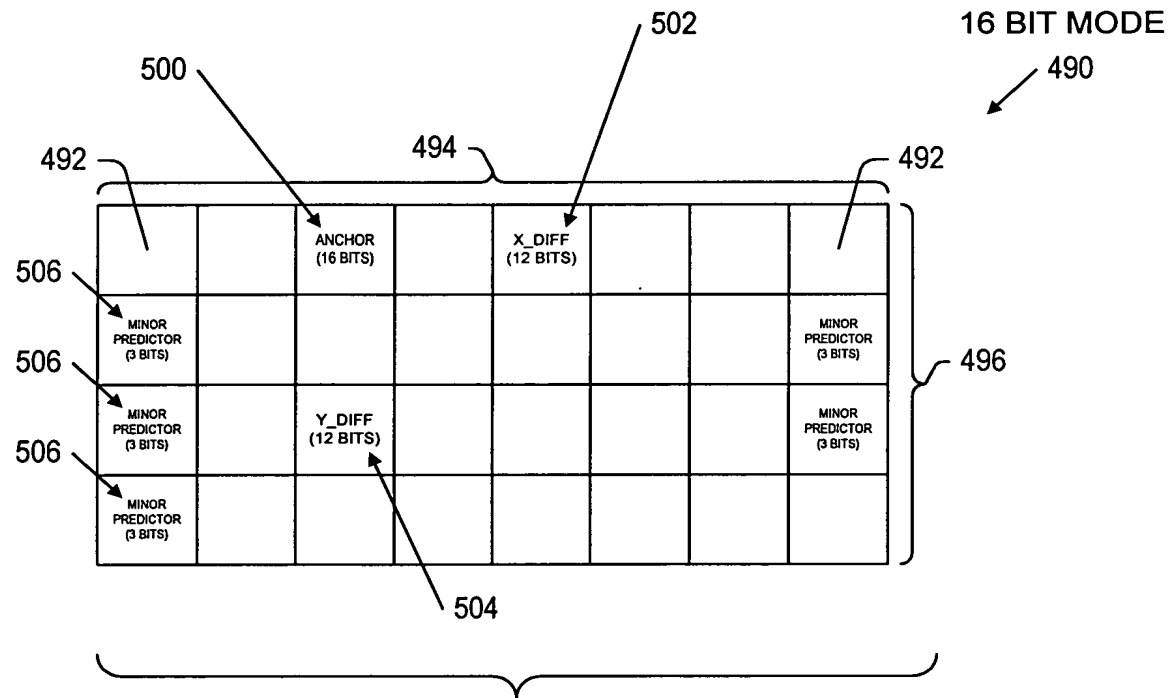


FIG. 8B

UNCOMPRESSED  
STORAGE FORMAT

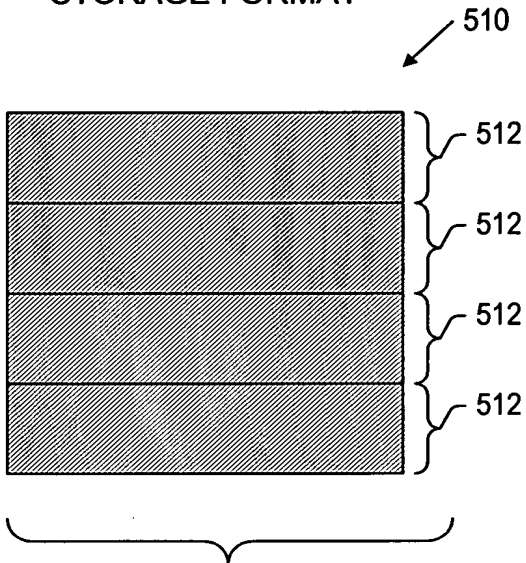


FIG. 8C

COMPRESSED  
STORAGE FORMAT

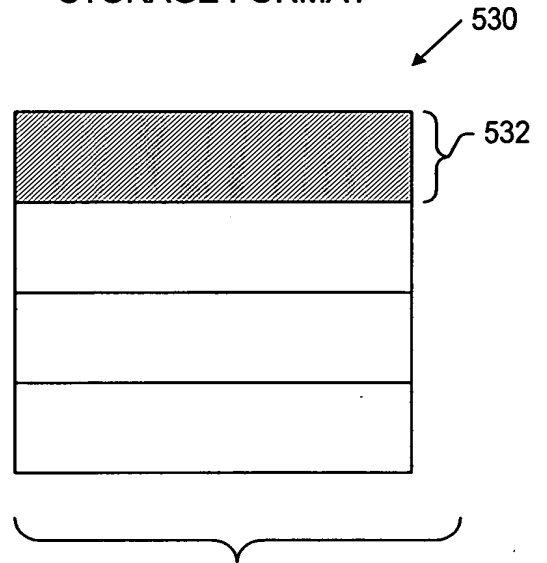


FIG. 8D

FAST CLEAR COMPRESSION FORMAT

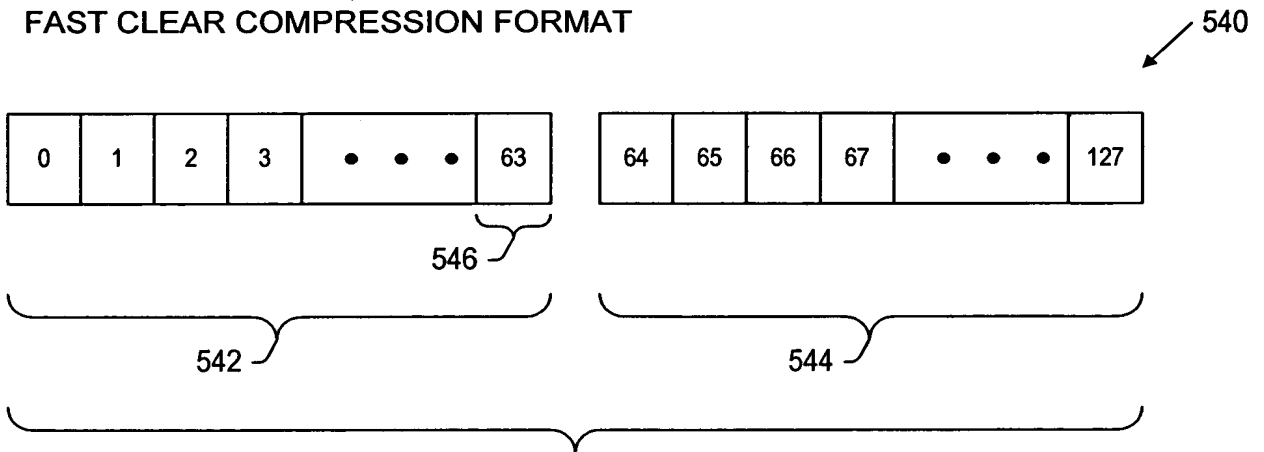


FIG. 8E

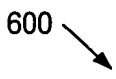


FIG. 9A

630 631 632 634 636 638

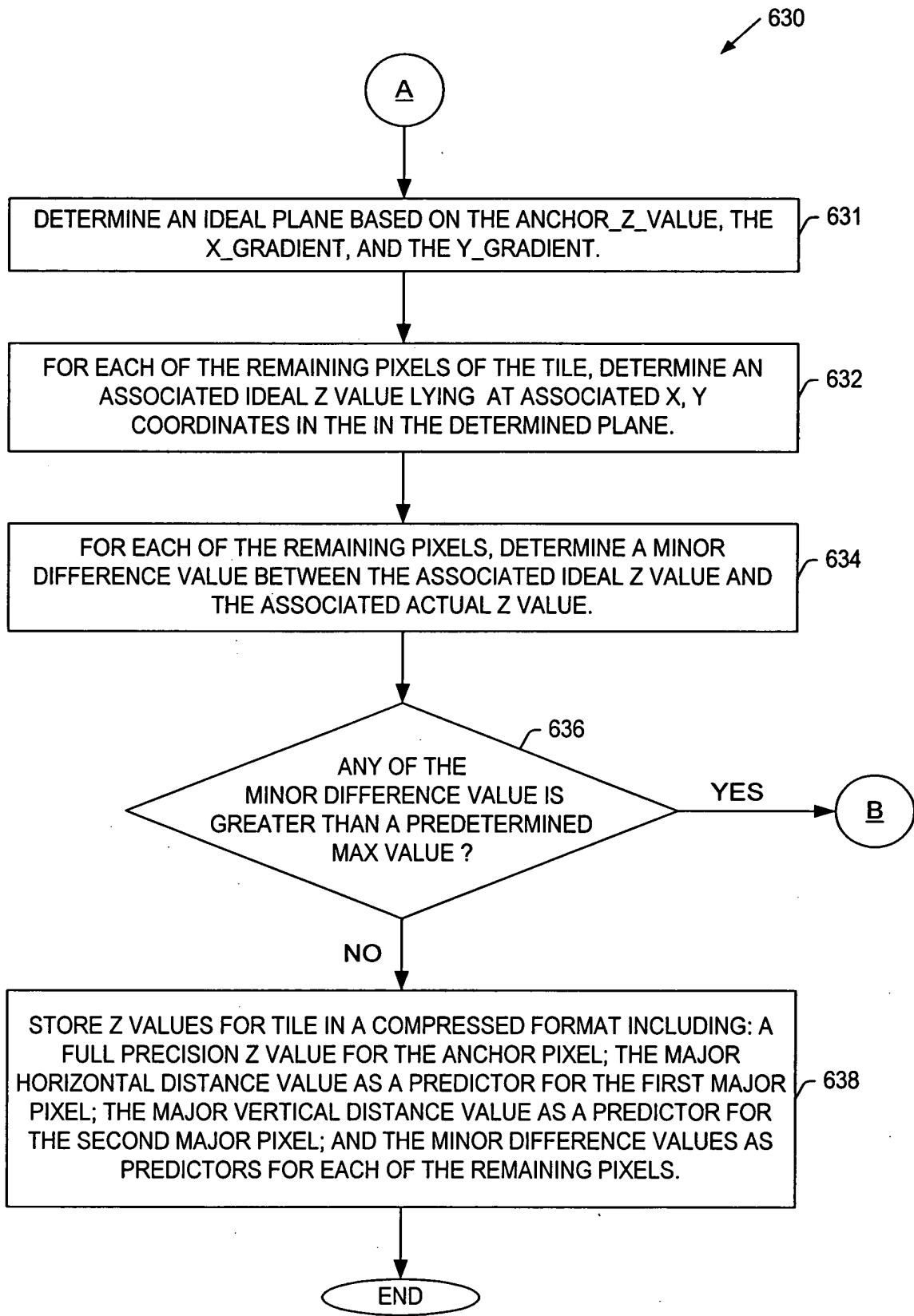


FIG. 9B

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Z0	Z1	Z2	Z3	Z4	Z5	Z6	Z7
Z8	Z9	Za	Zb	Zc	Zd	Ze	Zf
Z10	Z11	Z12	Z13	Z14	Z15	Z16	Z17
Z18	Z19	Z1a	Z1b	Z1c	Z1d	1e	Z1f

FIG. 10A

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Z0	Z1	Z2	Z3
Z4	Z5	Z6	Z7
Z8	Z9	Za	Zb
Zc	Zd	Ze	Zf

FIG. 10B

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Z2	anchor unsigned 16 bits
Z4_diff = Z4 - Z2	pred 12 bits
Z12_diff = Z12 - Z2	pred 12 bits
Z0_diff = Z0 - (Z2 - Z4_diff)	pred 3 bits
Z1_diff = Z1 - (Z2 - Z4_diff/2.0)	pred 3 bits
Z3_diff = Z3 - (Z2 + Z4_diff/2.0)	pred 3 bits
Z5_diff = Z5 - (Z2 + 3*Z4_diff/2.0)	pred 3 bits
Z6_diff = Z6 - (Z2 + 2*Z4_diff)	pred 3 bits
Z7_diff = Z7 - (Z2 + 5*Z4_diff/2.0)	pred 3 bits
Z8_diff = Z8 - (Z2 - Z4_diff + Z12_diff/2.0)	pred 3 bits
Z9_diff = Z9 - (Z2 - Z4_diff/2.0 + Z12_diff/2.0)	pred 3 bits
Za_diff = Za - (Z2 + Z12_diff/2.0)	pred 3 bits
Zb_diff = Zb - (Z2 + Z4_diff/2.0 + Z12_diff/2.0)	pred 3 bits
Zc_diff = Zc - (Z2 + Z4_diff + Z12_diff/2.0)	pred 3 bits
Zd_diff = Zd - (Z2 + 3*Z4_diff/2.0 + Z12_diff/2.0)	pred 3 bits
Ze_diff = Ze - (Z2 + 2*Z4_diff + Z12_diff/2.0)	pred 3 bits
Zf_diff = Zf - (Z2 + 5*Z4_diff/2.0 + Z12_diff/2.0)	pred 3 bits
Z10_diff = Z10 - (Z2 - Z4_diff + Z12_diff)	pred 3 bits
Z11_diff = Z11 - (Z2 - Z4_diff/2.0 + Z12_diff)	pred 3 bits
Z13_diff = Z13 - (Z2 + Z4_diff/2.0 + Z12_diff)	pred 3 bits
Z14_diff = Z14 - (Z2 + Z4_diff + Z12_diff)	pred 3 bits
Z15_diff = Z15 - (Z2 + 3*Z4_diff/2.0 + Z12_diff)	pred 3 bits
Z16_diff = Z16 - (Z2 + 2*Z4_diff + Z12_diff)	pred 3 bits
Z17_diff = Z17 - (Z2 + 5*Z4_diff/2.0 + Z12_diff)	pred 3 bits
Z18_diff = Z18 - (Z2 - Z4_diff + 3*Z12_diff/2.0)	pred 3 bits
Z19_diff = Z19 - (Z2 - Z4_diff/2.0 + 3*Z12_diff/2.0)	pred 3 bits
Z1a_diff = Z1a - (Z2 + 3*Z12_diff/2.0)	pred 3 bits
Z1b_diff = Z1b - (Z2 + Z4_diff/2.0 + 3*Z12_diff/2.0)	pred 3 bits
Z1c_diff = Z1c - (Z2 + Z4_diff + 3*Z12_diff/2.0)	pred 3 bits
Z1d_diff = Z1d - (Z2 + 3*Z4_diff/2.0 + 3*Z12_diff/2.0)	pred 3 bits
Z1e_diff = Z1e - (Z2 + 2*Z4_diff + 3*Z12_diff/2.0)	pred 3 bits
Z1f_diff = Z1f - (Z2 + 5*Z4_diff/2.0 + 3*Z12_diff/2.0)	pred 3 bits
fast_clear	1 bit

FIG. 11A

680  
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Compression format 16 bit Z:
bits [127:64] {Z1f_diff [2:0], Z1e_diff [2:0], Z1d_diff [2:0], Z1c_diff [2:0], Z1b_diff [2:0], Z1a_diff [2:0], Z19_diff [2:0], Z18_diff [2:0], Z17_diff [2:0], Z16_diff [2:0], Z15_diff [2:0], Z14_diff [2:0], Z13_diff [2:0], Z11_diff [2:0], Z10_diff [2:0], Zf_diff [2:0], Ze_diff [2:0], Zd_diff [2:0], Zc_diff [2:0], Zb_diff [2:0], Za_diff [2:0], Z9_diff [2:0]}
bits [63:0] = {fast_clear, Z9_diff [1:0], Z8_diff [2:0], Z7_diff [2:0], Z6_diff [2:0], Z5_diff [2:0], Z3_diff [2:0], Z1_diff [2:0], Z0_diff [2:0], Z12_diff [11:0], Z4_diff [11:0], Z2 [15:0]}
When cleared: bits [63:0] = (1'b1, 47'b0, Z_clear_value[15:0])

FIG. 11B

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Z5	anchor unsigned 24 bits
Z6_diff = Z6 - Z5	pred 15 bits
Z9_diff = Z9 - Z5	pred 15 bits
Z0_diff = Z0 - (Z5 - Z9_diff - Z6_diff)	pred 5 bits
Z1_diff = Z1 - (Z5 - Z9_diff)	pred 5 bits
Z2_diff = Z2 - (Z5 - Z9_diff + Z6_diff)	pred 5 bits
Z3_diff = Z3 - (Z5 + 2*Z6_diff - Z9_diff)	pred 5 bits
Z4_diff = Z4 - (Z5 - Z6_diff)	pred 5 bits
Z7_diff = Z7 - (Z5 + 2*Z6_diff)	pred 5 bits
Z8_diff = Z8 - (Z5 + Z9_diff - Z6_diff)	pred 5 bits
Za_diff = Za - (Z5 + Z9_diff + Z6_diff)	pred 5 bits
Zb_diff = Zb - (Z5 + Z9_diff + 2*Z6_diff)	pred 5 bits
Zc_diff = Zc - (Z5 + 2*Z9_diff - Z6_diff)	pred 5 bits
Zd_diff = Zd - (Z5 + 2*Z9_diff)	pred 5 bits
Ze_diff = Ze - (Z5 + 2*Z9_diff + Z6_diff)	pred 5 bits
Zf_diff = Zf - (Z5 + 2*Z9_diff + 2*Z6_diff)	pred 5 bits
fast_clear	1 bit

FIG. 12A

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Compression format 24 bit Z/8 bit stencil:
bits [127:64] = {Zf_diff [4:0], Ze_diff [4:0], Zd_diff [4:0], Zc_diff [4:0], Zb_diff [4:0], Za_diff [4:0], Z8_diff [4:0], Z7_diff [4:0], Z4_diff [4:0], Z3_diff [4:0], Z2_diff [4:0], Z1_diff [4:0], Z0_diff [4:1]}
bits [63:0] = {fast_clear, Z0_diff [0], Z9_diff[14:0], Z6_diff[14:0], Z5[23:0], stencil[7:0]}
When cleared: bits [63:0] = {1'b1, 31'b0, Z_clear_value[23:0], stencil_clear_value[7:0]}

FIG. 12B